> a plurality of modulators, a respective one of which corresponds to a respective one of the plurality of radio channel frequencies, each modulator generating at least one constant amplitude, phase modulated drive signal at the corresponding radio channel frequency from the respective information modulation such that the at least one constant amplitude, phase modulated drive signal corresponds to the information modulation for the corresponding radio frequency;....

Accordingly, Claim 1 recites that multiple radio channel frequency signals are modulated with respective information modulation, and that a modulator is provided for each frequency. Each modulator generates at least one constant amplitude, phase modulated drive signal at the corresponding radio channel frequency that corresponds to the information modulation for the corresponding radio frequency.

In sharp contrast, in Posner et al., a single input signal with multiple carriers is provided. See for example, Posner et al. Column 5, lines 38-40:

> The input signal typically includes, within a narrow bandwidth, multiple carriers which may be angle and/or amplitude modulated.

Moreover, the single signal is then provided in parallel to each of a plurality of modulators. See, for example, Posner et al. Column 5, line 66-Column 6, line 5:

> FIG. 2 is a functional block diagram of a multiple amplifier embodiment illustrating how the principle of the invention can be applied to an application where the required power output is high enough so as to require paralleling multiple RF power output stages. In this embodiment of the invention, it is advantageous to pulse modulate each of a number of parallel channels rather than the common input channel.

Thus, in Posner et al., the same signal containing multiple carriers is sent in parallel to multiple modulators, to provide enough power output. In contrast, Claim 1 recites that, "a plurality of radio channel frequency signals that are modulated with respective information modulation" are provided to "a plurality of modulators, a respective one of which corresponds to a respective one of the plurality of radio channel frequencies", wherein each modulator generates at least one drive signal "such that the at least one constant amplitude, phase modulated drive signal corresponds to the information modulation for the corresponding radio frequency".

Finally, Claim 1 also recites:

> a coupling network that connects the outputs of the saturated power amplifiers in series to produce a combined signal that is applied to the common antenna, such that the common antenna radiates the plurality of radio

> channel frequency signals that are modulated with the respective information modulation. (Emphasis added.)

The Official Action notes that Posner et al. includes an N-way power combiner **32** in Figure 2. However, as noted by Posner et al. Column 6, lines 32-36:

> Combiner **32** must be isolated, that is, it must contain dissipative elements that guarantee that the operating load impedance presented to each of the channels is independent of the source impedance or source power from each channel.

There is no disclosure or suggestion that the coupling network connects the outputs of the saturated power amplifiers in series. In fact, Posner et al. teaches away from series coupling by stating that the combiner maintains independent load impedances for each channel.

In this regard, Applicant wishes to note that, to establish a prima facie case of obviousness, three basic criteria must be met. The prior art reference (or references when combined) must teach or suggest *all* the claim limitations. There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, and there must be a reasonable expectation of success of the combination. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found *in the prior art*, not in applicant's disclosure. See MPEP § 2143. As recently affirmed by the Court of Appeals for the Federal Circuit, to support combining references in a § 103 rejection, evidence of a suggestion, teaching, or motivation to combine must be *clear and particular*, and this requirement is not met by merely offering broad, conclusory statements about teachings of references. *In re Dembiczak*, 50 USPQ2.d 1614, 1617 (Fed. Cir. 1999).

Based on the analysis described above, there is no description or suggestion in Posner et al. to separately modulate each separate radio channel frequency signal in a separate modulator to provide separate drive signals that correspond to the information modulation for the corresponding radio frequency. Moreover, it would not be obvious to modify Posner et al. to do so, because Posner et al. is directed to "an application where the required power output is high enough so as to require paralleling multiple RF power output stages". See also Posner et al. Column 3, lines 16-19:

Another object of the invention is to enable a plurality of nonlinear power amplifiers operating in parallel to provide a combined power output signal replicating a multiple signal source.

Moreover, it would not be obvious to modify Posner et al. to provide "a coupling network that connects the outputs of the saturated power amplifiers in series", as recited in Claim 1, because Posner et al. clearly describes isolation of the various channels of the combiner. For at least these reasons, independent Claims 1, 20 and 39 are patentable over Posner et al. Dependent Claims 2-19, 21-38 and 40-50 are patentable at least per the patentability of the independent claim from which they depend.

Many of the Dependent Claims Are Separately Patentable

Moreover, many of the dependent claims are separately patentable. For example, Claim 13, and analogous means-plus-function Claim 32, recites:

> 13. A transmitter according to Claim 1 wherein the coupling network comprises a plurality of transformers, each having a primary and a secondary, a respective primary being coupled to a respective output of a respective saturated power amplifier, the secondaries being serially coupled to the common antenna.

Posner et al. does not appear to contain any description or suggestion of any transformer coupling and, in particular, contains no suggestion of the transformer coupling recited in Claims 13 and 32. Moreover, it would not be obvious to combine a transformer with Posner et al. absent the hindsight provided by the description of the present application, because this combination would appear to destroy the operability of Posner et al. by eliminating the isolation of the various channels of the combiner. Accordingly, Claims 13 and 32 are separately patentable.

Moreover, dependent Claim 14, and analogous means-plus-function Claim 33, recites:

> 14. A transmitter according to Claim 1 wherein the coupling network comprises a plurality of quarter wavelength transmission lines each having first and second ends, a respective first end being coupled to a respective output of a respective saturated power amplifier, the second ends being coupled together to the common antenna.

Posner et al. does not appear to contain any description or suggestion of any quarter wavelength transmission lines and, in particular, contains no suggestion of the quarter

wavelength transmission lines recited in Claims 14 and 33. Moreover, it would not be obvious to combine a quarter wavelength transmission line with Posner et al. absent the hindsight provided by the description of the present application, because this combination would appear to destroy the operability of Posner et al. by eliminating the isolation of the various channels of the combiner. Accordingly, Claims 14 and 33 are separately patentable.

Also, dependent Claim 15, and analogous means-plus function Claim 34, recites:

> 15. A transmitter according to Claim 1 wherein the coupling network comprises a plurality of discrete inductance-capacitance equivalents of quarter wavelength transmission lines each having first and second ends, a respective first end being coupled to a respective output of a respective saturated power amplifier, the second ends being coupled together to the common antenna

Posner et al. does not appear to contain any description or suggestion of a plurality of discrete inductance-capacitance equivalents of quarter wavelength transmission lines and, in particular, contains no suggestion of the discrete inductance-capacitance equivalents of quarter wavelength transmission lines recited in Claims 15 and 34. Moreover, it would not be obvious to combine a discrete inductance-capacitance equivalent of quarter wavelength transmission lines with Posner et al. absent the hindsight provided by the description of the present application, because this combination would appear to destroy the operability of Posner et al. by eliminating the isolation of the various channels of the combiner. Accordingly, Claims 15 and 34 are separately patentable.

Finally, Claim 16, and analogous means-plus-function Claim 35, recites:

> 16. A transmitter according to Claim 15 wherein the plurality of discrete inductance-capacitance equivalents of quarter wavelength transmission lines each comprises an inductor connected between a respective output of a respective saturated power amplifier and the common antenna, and a capacitor connected to the common antenna, to thereby form a π circuit with the output capacitance of the saturated power amplifiers.

Posner et al. does not appear to contain any description or suggestion of an inductor and capacitor that form a π circuit and, in particular, contains no suggestion of an inductor and capacitor that form a π circuit recited in Claims 16 and 35. Moreover, it would not be obvious to combine an inductor and capacitor that form a π circuit with

Posner et al. absent the hindsight provided by the description of the present application, because this combination would appear to destroy the operability of Posner et al. by eliminating the isolation of the various channels of the combiner. Accordingly, Claims 16 and 35 are separately patentable.

Conclusion

Posner et al. relates to a transmitter, so that signal sources, modulators and amplifiers are included. However, as was shown above, many of the recitations of the pending claims are not described or suggested by Posner et al., and it would not be obvious to modify Posner et al. to provide these claim recitations. For at least these reasons, Applicant respectfully submits that the pending claims are patentable. Accordingly, Applicant respectfully requests allowance of the present application and passing the application to issue.

Respectfully submitted,

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